

China Crop Environment Brief: 1977 Sixth Report, December 1977

An Intelligence Assessment

Secret

*GC CEB 77-007
December 1977*

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FOREWORD

This is the sixth in a series of China Crop Environment Briefs which are being prepared to assist in the refinement of crop production estimates of the Peoples Republic of China. These all-source experimental analyses will be produced monthly through early December 1977. Additional ad hoc briefs will be prepared as warranted by developments. The scope and format of the briefs may vary according to the nature of conditions reported and the perceived utility of the finding.

Within the National Foreign Assessment Center (NFAC) of CIA, cooperative efforts of the Environment and Resource Analysis Center (ERAC) of the Office of Geographic and Cartographic Research and the China Division of the Office of Economic Research facilitated the preparation of this brief. In addition, informal consultations were held with the Economic Research Service, U.S. Department of Agriculture. The brief was written by a multidisciplinary team housed in ERAC -- composed of personnel from both NFAC organizations -- representing the disciplines of geography, economics, agronomy, and meteorology.

METHODOLOGY

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25X1D All intelligence sources -- [REDACTED] meteorological data as well as traditional sources such as human intelligence reporting, translations, and the open literature -- are being exploited to produce integrated crop environment analyses. The combination of methodologies used is evolving and will be refined and expanded as experience is accumulated and new data inputs become available. A more complete statement of the methodologies employed will be published later.

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KEY POINTS

Close to the onset of winter, crop environmental conditions were generally good in most parts of China.

Fall-Sown Crops

Temperature and soil moisture levels were generally above normal and favorable for crop growth in October and November.

Fall-sown crops are growing well in most parts of China.

High moisture levels, however, continue to cause problems in southeastern Hopeh Province.

Fall-Harvested Crops

Imagery lends support to Chinese claims of bumper harvests in the Northeast.

Few, if any, crops were harvested from those fields affected by flooding in Hopeh Province.

25X1C [REDACTED] good late rice crops being harvested during late October in parts of Hupeh, Hunan and Kwangtang Provinces.

25X1A Note: This paper was produced by the Office of Geographic and Cartographic Research. Comments and questions may be directed to [REDACTED] 351-3748.

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DETAILS

Environmental Conditions Affecting Fall-Sown Crops

Close to the onset of winter, crop environment conditions were generally good in most parts of China. Fall-sown crops (winter crops) observed on October and November LANDSAT imagery appear to be growing well in Honan, most of Hopeh, southern Shantung, southeast Shansi, northern Kiangsu and northern Anhwei Provinces (See Figure 1). Temperatures generally were above normal during October and November (See Appendix B), and soil moisture was more than adequate despite below normal precipitation during the last half of November (see Figure 2). The excessive moisture conditions experienced first in early summer, and again in late October and early November, apparently benefited the fall-sown crops on the higher elevations in the major winter wheat area. Crops in this area appear much improved over 1976 (See Figures 1 & 3). [REDACTED] 25X1C

[REDACTED] winter wheat looked good in western Hopeh and northern Honan Provinces in late October. [REDACTED] 25X1C

[REDACTED] winter wheat in Peking and nearby areas to the north also was doing well and that soil moisture levels were favorable; [REDACTED] no damage from cold weather.

In contrast, [REDACTED] the low lying areas in southeastern Hopeh Province most seriously affected by flooding this past summer still suffer from excessive moisture. Most low-lying fields apparently were not planted or, if planted, lost part of the crops. Unseasonably heavy rainfall in late October and early November have complicated matters. Many weather stations in this area reported rainfall for 27 and 28 October that greatly exceeded the monthly mean values for October. This concentrated period of unseasonably heavy precipitation, falling on an area with an already high soil moisture level, probably has hurt the fall-sown crops. [REDACTED] 25X1D

[REDACTED] excessive moisture and uneven vegetative growth patterns exist within the fields planted to winter crops. The high moisture levels in the lower-lying fields not yet planted -- approximately 50 percent of fields in the affected areas -- probably have delayed or precluded the planting of some winter crops in this area. 25X1D

Potential crop environment problems persist in parts of Shantung Province. The western Shantung Peninsula continued to receive below normal precipitation and had below normal soil moisture levels (See Figure 2). [REDACTED] 25X1D

the drought conditions have not been relieved in this area but that

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the lower soil moisture and reservoir levels have had little effect on the fall-sown crops. Here, the continued effectiveness of the irrigation system very likely will affect the success or failure of the overwintering crops. The Chinese claimed on 4 November that 3.3 of the 4.0 million hectares planned for winter crops in Shantung Province either had adequate soil moisture or were watered by hand before fall sowing.

Favorable crop environment conditions exist along the Yangtze River in Hupeh, Kiangsi, Anhwei, and Kiangsu Provinces. Above normal temperatures were reported for most of these areas in October and November. Adequate soil moisture levels were present at the end of November, and the winter crops observed on imagery were growing well.

Temperatures were slightly above normal and precipitation was above normal in the Northeast during October and November (See Appendix A). Soil moisture was adequate at the end of November, except for portions of Heilungkiang Province and the extreme north central part of Kirin Province (See Figure 2). In Heilungkiang and Kirin Provinces, the Chinese claim that conditions leading to a spring drought in 1978 are developing. If the Northeast does not receive adequate precipitation before next spring, planting problems may occur -- particularly in those areas with low soil moisture levels.

Parts of Szechwan, Shensi, Hunan, Kiangsi, Chekiang, Fukien, and Kwangtung Provinces entered the winter season with low soil moisture levels (See Figure 2). The success of fall-sown crops largely will be dependent on the effectiveness of the irrigation systems if these areas continue to receive below normal precipitation. In Kwangtung, however, [REDACTED] the fall-sown crops are growing well, substantiating Chinese claims. The Chinese report that 80 percent of Kwangtung's planted area is irrigated and that "60 percent of the total planting area has basically guaranteed good harvest irrespective of drought and flood".

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According to Chinese media sources, [REDACTED] Szechwan experienced drought in the central and northern portions of the province in late October. Meteorological data indicate that parts of Central and northern Szechwan Province approached the winter season with lower than normal soil moisture levels.

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Fall Harvest Conditions

25X1D Environmental conditions favorable to the fall harvest season appeared to exist in most areas of China during October and November. [REDACTED] the harvest of spring- and summer-sown crops was nearly completed by the end of November in areas north of the Yangtze River valley. South of the Yangtze River valley, the late rice crop harvest was almost completed in late November.

The full to overflowing grain drying and storage yards observed on imagery of the Northeast lend support to the Chinese claim of bumper harvests of spring- and summer-sown crops in that area. Liaoning reported that it achieved the "second best harvest in history", and bumper autumn harvests of spring- and summer-sown grain crops were reported in Heilungkiang Province. In early October, the Chinese reported a new record wheat output for Heilungkiang. An editorial in a provincial newspaper of 24 October reported that "serious autumn drought and early frost once again caused damage"; available data do not indicate that there were serious crop environment problems this fall.

25X1D Few, if any, summer-sown crops were harvested from those fields in Hopeh Province that were inundated with flood waters in August. Threshing yards in most of the affected villages [REDACTED] contained little or no grain during the harvest season. The lack of Chinese pronouncements on the fall harvest in this area suggests that there were serious fall harvesting problems.

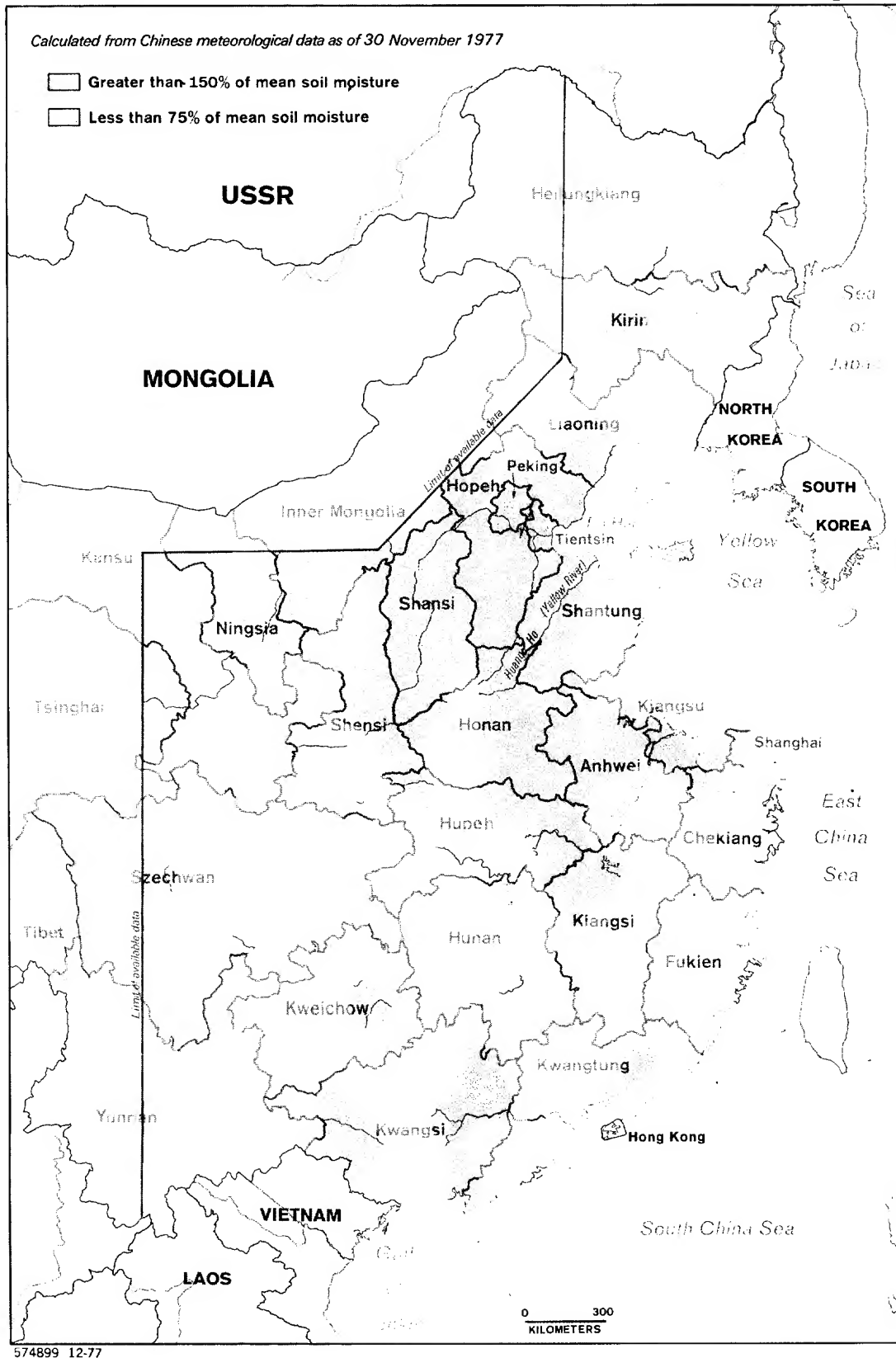
25X1C Elsewhere, [REDACTED] in eastern Hupeh and northeastern Hunan Provinces during the last 10 days of October
25X1C [REDACTED] the late rice crop -- actually being harvested in some areas -- looked good. [REDACTED]
25X1C [REDACTED] the late rice crop in Kwangtung Province, west of Hong Kong, was in good condition and that there, also, some harvesting had begun.

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China Soil Moisture

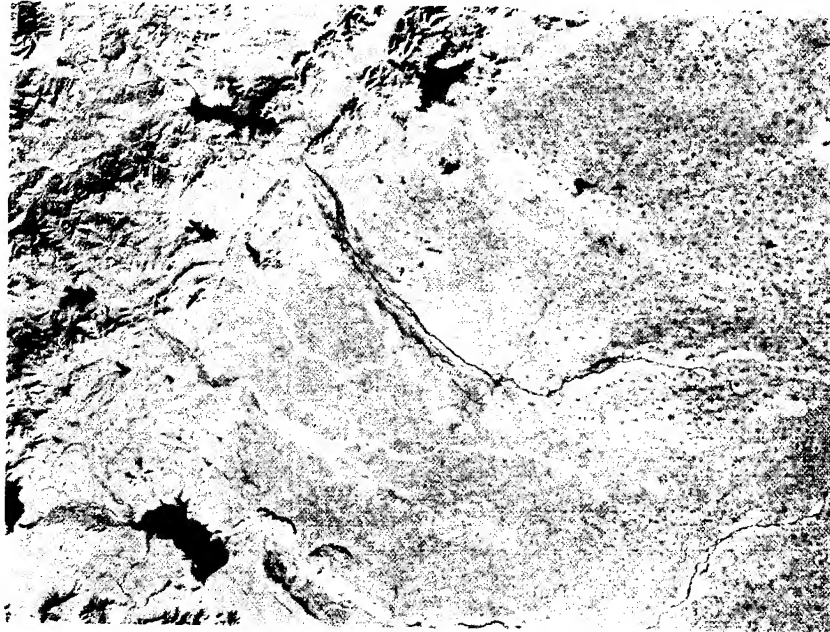
Figure 2



Western Hopeh Province

LANDSAT II Imagery, 14 November 1976

Figure 3A



LANDSAT II Imagery, 9 November 1977

Figure 3B



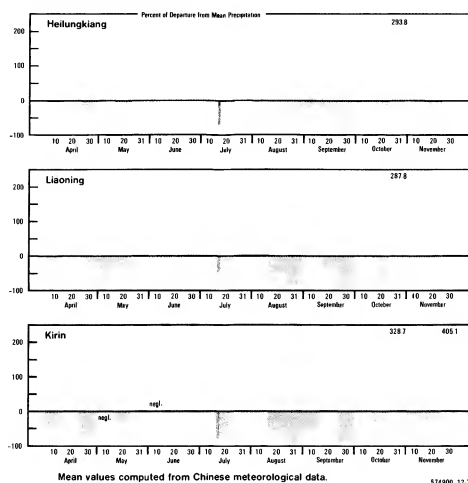
The high vigor level of the 1977 fall-sown crops, indicated by the red color, shows that the crops are in much better condition than those in 1976. Reservoirs are at or near maximum capacity in 1977.

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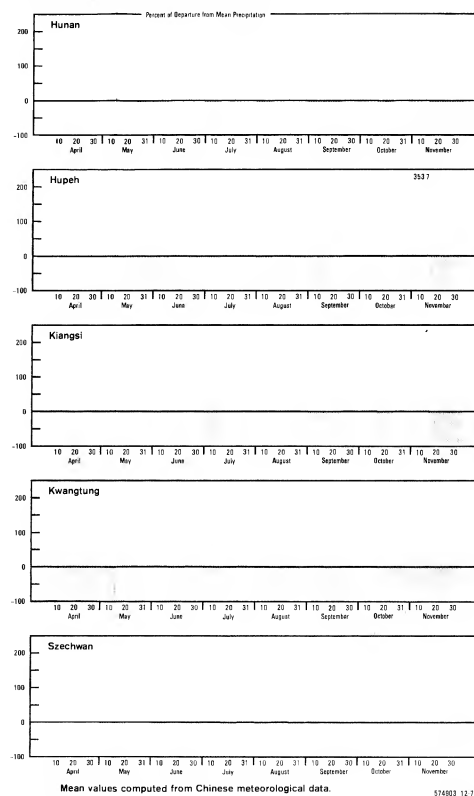
Precipitation Variations from Mean:
Northeast China Provinces

Figure 4A



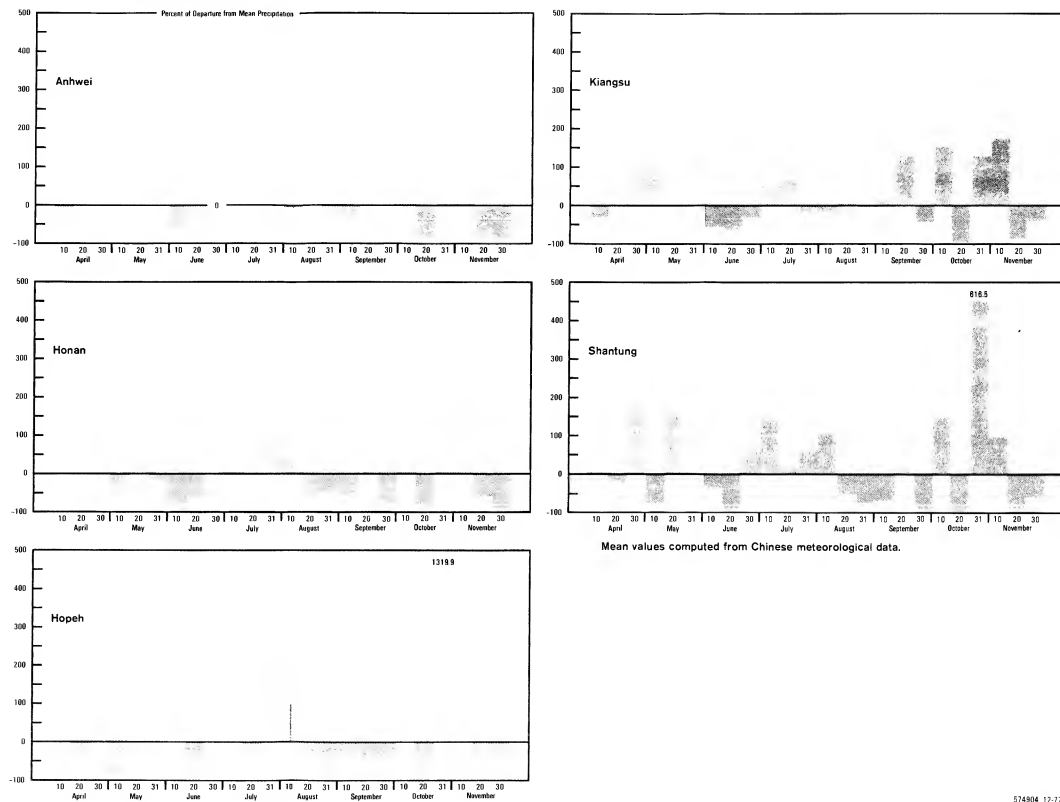
Precipitation Variations from Mean:
Selected Major Rice Growing Provinces

Figure 4B



Precipitation Variations from Mean:
Provinces of the North China Plain

Figure 4C



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Selected Precipitation Data

APENDIX A-1

<u>Province</u>	Percent of Mean Monthly Precipitation 1977					
	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>
Anhwei	68.0	180.3	104.7	136.1	220.1	124.9
Chekiang	114.0	94.0	116.2	129.3	61.4	70.2
Fukien	136.5	90.3	76.9	74.4	88.8	49.9
Heilungkiang	132.8	119.9	52.6	48.1	182.5	160.6
Honan	84.9	207.2	75.4	69.8	280.4	135.9
Hopeh	199.7	180.6	93.8	44.9	574.7	90.2
Hunan	158.0	119.3	116.8	73.0	109.9	86.1
Hupei	81.0	179.9	100.4	68.5	155.7	136.9
Kiangsi	131.4	165.3	144.5	95.9	107.8	51.0
Kiangsu	49.2	133.0	96.9	131.8	165.9	117.7
Kirin	141.9	109.4	65.0	55.8	209.0	204.8
Kwangsi	150.7	126.9	94.4	119.1	203.9	57.1
Kwangtung	112.3	95.7	62.4	112.2	98.0	25.2
Kweichow	132.4	119.6	106.9	97.6	168.1	148.1
Liaoning	136.6	148.7	60.0	54.5	191.7	107.0
Shansi	182.5	157.7	124.3	82.8	191.2	133.5
Shantung	74.4	172.3	91.3	43.9	327.8	78.2
Shensi	84.0	147.5	85.7	68.3	105.8	120.3
Szechwan	84.0	153.9	80.7	76.2	119.6	105.7
Yunan	74.4	113.2	64.6	123.3	136.8	129.7

Values computed from Chinese meteorological data.

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APPENDIX A-2

Selected Precipitation Data

<u>Province</u>	Total Monthly Precipitation 1977 (in millimeters)					
	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>
Anhwei	108.9	242.5	134.5	115.2	76.5	50.8
Chekiang	273.7	125.0	177.7	197.3	38.1	41.2
Fukien	371.2	161.7	131.8	106.4	53.6	22.9
Heilungkiang	120.9	173.1	57.4	31.7	47.8	20.6
Honan	55.6	293.1	94.7	45.6	70.6	30.0
Hopeh	116.0	285.2	130.2	20.5	65.0	7.6
Hunan	332.6	170.7	158.8	52.4	99.4	61.0
Hupei	121.5	267.5	126.7	50.5	87.9	50.0
Kiangsi	358.5	194.3	178.2	81.7	62.3	32.1
Kiangsu	62.9	218.5	127.2	126.5	46.4	39.6
Kirin	134.1	157.5	83.3	32.5	52.4	31.7
Kwangsi	385.6	287.7	196.9	113.9	152.1	27.6
Kwangtung	307.2	255.6	154.3	178.7	65.4	9.4
Kweichow	263.0	207.7	159.1	100.2	153.3	62.5
Liaoning	108.4	261.0	96.8	39.5	70.8	22.3
Shansi	86.7	182.3	131.6	37.3	31.7	12.2
Shantung	53.0	240.9	126.1	28.5	66.9	15.9
Shensi	47.4	141.6	91.8	57.9	38.2	22.5
Szechwan	122.0	282.5	133.9	105.2	98.4	36.8
Yunnan	159.3	262.6	143.8	146.8	105.9	51.2

Values computed from Chinese meteorological data.

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APENDIX B-1

Selected Temperature Data
(Celsius)Departure from Historical
Mean Monthly Temperature
1977

<u>Province</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>
Anhwei	-0.8	-1.0	-2.2	-0.9	1.7	-1.0
Chekiang	-1.6	-0.3	-2.5	-0.8	0.1	-1.6
Fukien	-1.1	-0.8	-1.9	-1.0	-0.2	-2.6
Heilungkiang	-1.4	0.0	-1.4	-0.6	0.4	0.8
Honan	0.7	-0.3	-0.8	0.2	2.1	0.2
Hopeh	-0.7	-0.6	-0.7	0.3	0.9	0.9
Hunan	-1.8	-0.5	-1.4	-1.1	1.8	0.1
Hupei	-0.3	0.5	-0.4	0.7	2.3	0.5
Kiangsi	-2.0	-1.2	-1.8	-1.1	1.7	-1.3
Kiangsu	-0.3	-0.2	-1.5	0.1	1.9	-0.6
Kirin	-0.6	0.7	-0.5	0.2	1.5	0.6
Kwangsi	-1.0	-0.7	-0.9	-1.2	-0.3	-2.4
Kwangtung	0.2	-0.4	-0.3	-1.0	0.1	-2.0
Kweichow	-2.2	-1.4	-2.4	-1.4	-0.5	-2.6
Liaoning	-1.9	-0.3	-1.8	-0.9	0.1	0.1
Shansi	-1.0	-1.2	-0.8	0.0	1.6	1.3
Shantung	0.6	0.6	-1.1	0.1	1.9	-0.5
Shensi	-1.6	-1.8	-0.6	-0.2	1.1	0.1
Szechwan	-1.3	-1.4	-1.4	0.6	0.1	-0.9
Yunnan	1.0	0.9	0.0	-0.1	0.0	-1.3

Values computed from Chinese meteorological data.

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APPENDIX B-2

Selected Temperature Data
(Celsius)Mean Monthly Temperature
1977

<u>Province</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>
Anhwei	24.7	28.1	26.0	22.1	18.3	9.6
Chekiang	23.8	28.9	27.0	24.2	19.9	12.3
Fukien	25.4	28.5	27.6	25.6	21.8	15.2
Heilungkiang	17.7	22.3	19.3	13.2	5.3	-6.8
Honan	23.4	25.0	23.4	19.6	15.6	7.8
Hopeh	21.8	24.2	22.6	18.9	13.2	4.5
Hunan	24.3	28.8	27.5	23.4	19.9	12.5
Hupei	24.6	27.6	26.1	22.5	18.4	11.0
Kiangsi	24.0	28.5	26.8	23.3	20.1	12.1
Kiangsu	22.8	27.0	25.0	21.7	17.5	9.3
Kirin	17.5	22.1	19.2	14.0	7.6	-2.6
Kwangsi	26.7	27.9	27.7	25.2	22.6	16.3
Kwangtung	27.9	28.7	28.6	26.8	24.0	17.9
Kweichow	21.9	24.7	23.6	20.7	17.5	10.8
Liaoning	20.3	24.5	21.7	17.0	10.5	0.5
Shansi	20.9	22.8	21.3	17.3	12.6	4.4
Shantung	24.2	27.0	24.7	20.9	16.7	6.9
Shensi	20.6	22.8	21.7	17.5	12.7	4.8
Szechwan	23.0	25.7	25.2	22.7	17.4	11.1
Yunnan	22.2	22.1	21.4	19.2	16.7	11.9

Values computed from Chinese meteorological data.

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